

MicroFab Technologies, Inc.

www.microfab.com

CT-PT-21 User's Manual

General Notice:

The information contained in this document is subject to change without notice.

MicroFab makes no warranty of any kind with regard to this material, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. MicroFab shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Regarding Dispensing Device(s)

All dispensing devices are tested at MicroFab. Test waveforms are established for IPA and DI Water. If your dispenser does not function as expected, repeat these test conditions as described in the form included with each dispensing device. If the device does not dispense IPA or DI Water with the test waveforms, please contact MicroFab.

Cleaning procedures for MicroFab's dispensers can be found on the website at www.microfab.com

Warranty

The PH-47 printhead is warranted against defects in material and workmanship for a period of thirty days from date of shipment. During the warranty period, MicroFab will, at its option, either repair or replace units which prove to be defective.

Limitation of Warranty

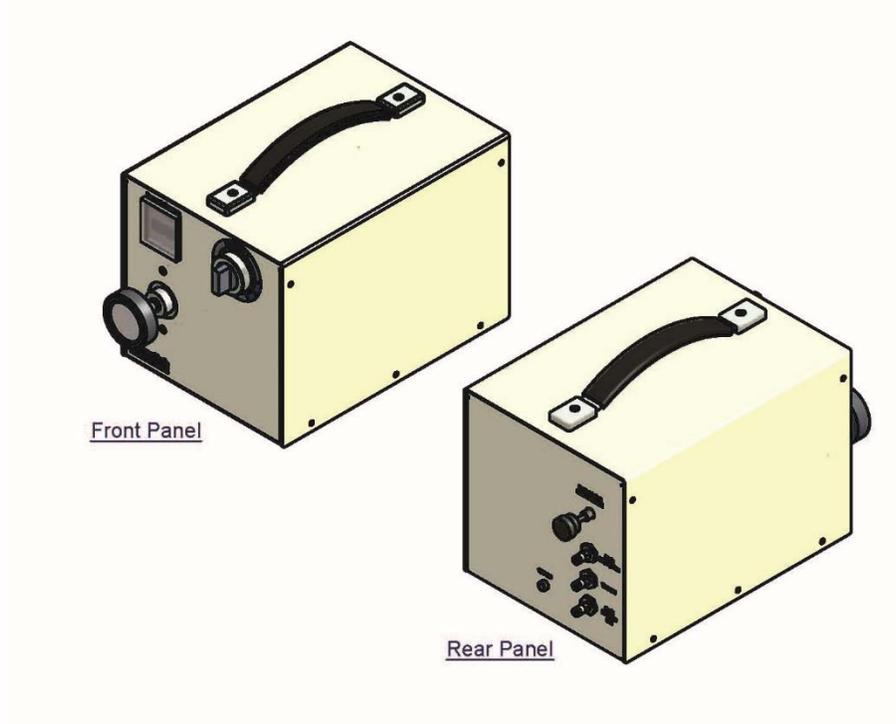
The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, or operation outside of the environmental specifications for the product. MicroFab makes no claim that the unit will operate with jetting devices, dispensing systems, or waveform generators from any other Manufacturer.

General Safety Considerations

Warning	The jetting device itself presents no general chemical hazard. However, when fluids are selected to be dispensed by the operator, appropriate safety measures should be followed as outlined in the selected material's MSDS.
Warning	If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.

Introduction

MicroFab's CT-PT-21 Pneumatics Controller has been designed to provide stable back pressure to MicroFab's jetting devices. Positive and negative purge pressures are also available for filling and emptying the device



quickly.

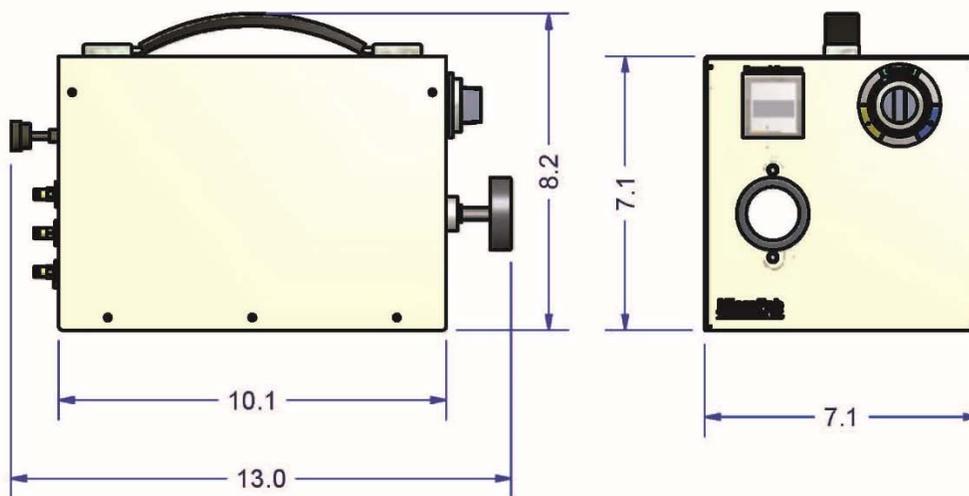


Figure 1 - CT-PT-21

Figure 2 - Physical Dimensions in inches

Facility Requirements

Power Requirements

- Required power – 100 – 240 VAC; 0.25A max; 50/60 Hz;
- 12VDC power supply included

Pneumatics

Input Pressure: 60 PSIG / 3102 mmHg MAX pressure from house compressed air or bottle gas

- Vacuum Input: 20 inHg / 507mmHg recommended

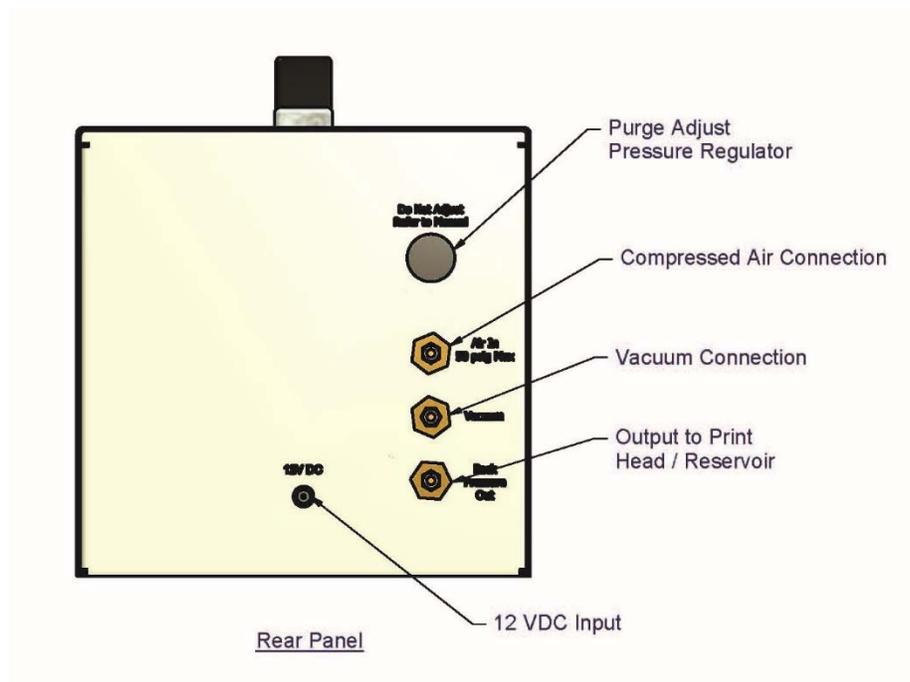


Figure 3 - Rear Panel Connections

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The purge adjust pressure regulator is set to ~15 PSIG / 775mmHg at MicroFab. The MAXIMUM input pressure to the Pneumatics Controller from an external source should be ≤ 60 PSIG / 3102 mmHg.

Installation

Shipment Contents

- CT-PT-21 Pneumatics Controller
- 12VDC Power Supply
- 1/8" OD Pneumatic Tubing (PTFE)

- 2 x 1/4" and 1/8" NPT:Quick Connect Fittings
- Keyence Instruction Manual

Setup

Connect the 12VDC power supply to the CT-PT-21 and connect to an appropriate outlet.

Connect the 1/8" Pneumatic Tubing to the Compressed Air Connection at the rear panel and to a pressure source.

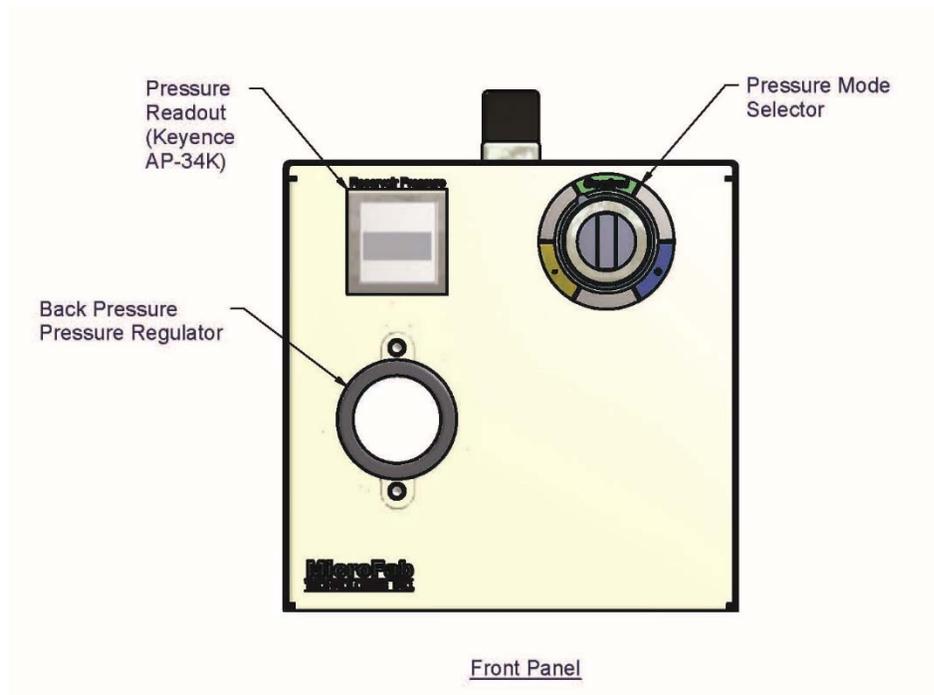
Connect the 1/8" Pneumatic Tubing to the Vacuum Connection at the rear panel and to a vacuum source.

The Keyence display on the front panel is set to display in mmHg units and can be changed as described in the Keyence manual included in this shipment; this unit will be activated as long as power is supplied. There is no external power switch.

Connect the 1/8" Pneumatic tubing between the Output to Printhead / reservoir connection at the rear panel and the printhead reservoir.

Prepare your printhead / reservoir according to its specifications before dispensing.

To change the purge pressure from the factory set 15psig, turn the Pressure Mode Selector on the front panel to "Positive", insert the provided plug into the Outlet to Printhead/reservoir connection, and turn the Purge Adjust Pressure Regulator on the back panel. Turning the pressure regulator knob counterclockwise will lower the purge pressure output. You can watch the Keyence display to determine the pressure output in mmHg. A display of "FFF" is not a malfunction; the pressure output is simply outside the range of the Keyence pressure monitor. Remember the total pressure input to the CT-PT-21 must be ≤ 60 PSIG / 3102 mmHg before making any adjustments or using the Pneumatics Controller. The recommended starting purge setting is 15psi.



Front Panel Figure 4 Controls

Normal Operation

MicroFab's CT-PT-21 Pneumatics Controller has been designed to provide stable backpressure to MicroFab's jetting devices. Positive and negative purge pressures are also available to assist in filling and emptying the device. The Pneumatics Controller can be set between control and purge modes by switching the Pressure Mode Selector.

Pressure Mode Selector

The Pressure Mode Selector controls distribution of control pressure, vacuum purge, or positive pressure purge to the reservoir via the selector switch as described below:

Control: This allows the operator to precisely control the balance of pressure and vacuum introduced to the reservoir via the Backpressure Pressure Regulator.

Positive : This setting activates a positive purge to the reservoir. The pressure value is controlled via the Purge Adjust Pressure Regulator located on the back panel and is preset at MicroFab.

Negative : This setting activates a vacuum purge to the reservoir. The vacuum pressure is regulated via the vacuum supplied to the Pneumatics Controller at the Vacuum Connection located on the back panel.

The areas between the control selections have no functions but are open to atmosphere

Pressure Readout (Keyence)

The Pressure Readout displays the value of pressure (positive or negative) being supplied to the reservoir under any of pressure modes described above. The display is set to mmHg at MicroFab but may be changed according to the Keyence instructions supplied with the pneumatics controller.

Backpressure Regulator (Fairchild)

The Backpressure Regulator controls the balance of positive and negative pressure supplied to the reservoir when the Pressure Mode Selector is set to “Control”. This balance allows fine control of the meniscus during dispensing as shown in **Figure 5**. Turning the knob clockwise increases positive pressure and decreases negative pressure, while turning the knob counterclockwise increases negative pressure and decreases positive pressure.

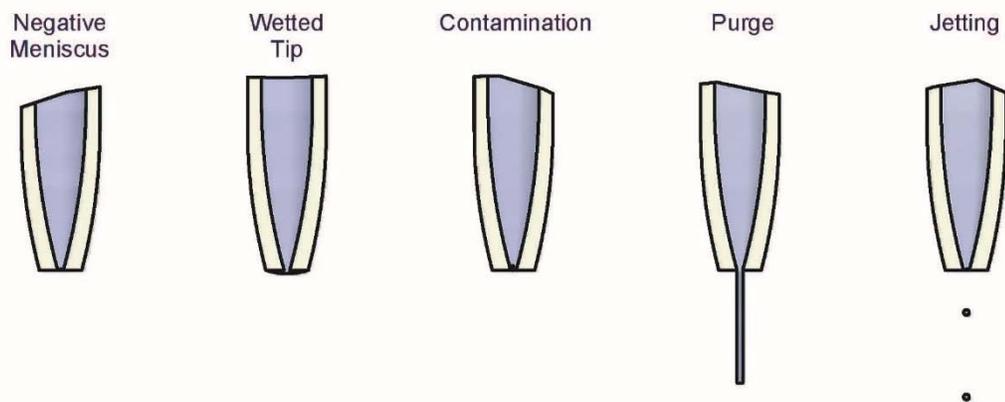


Figure 5 - Examples of meniscus position at the orifice of a dispensing device

Dispensing with pneumatics management from the CT-PT-21:

Filling the device with fluid from the printhead reservoir: To do this, turn the Pressure Mode Selector clockwise to the “Positive” position. This will provide positive pressure to the reservoir and fluid should flow through the device. Return the Pressure Mode Selector to the “Control” position to manage dispensing backpressure.

Controlling backpressure while dispensing: Switch the Pressure Mode Selector from “Positive” to “Control” to transfer control to the Backpressure Regulator for fine pressure adjustment. Adjust the Backpressure Regulator until the fluid meniscus is flush with the device orifice. Often a lint free swab is useful in cleaning the front face of the orifice in order to verify the pressure level. **Figure 5** shows possible meniscus positions at the orifice.

Emptying the device of fluid back into the reservoir: Switch the Pressure Mode Selector from “Control” to “Negative”. This will provide negative pressure to the reservoir and fluid should flow from the device and back into the reservoir. Keep in mind that as fluid is drawn from the device into the reservoir, the atmosphere at the device tip is being drawn into the device. Take caution with fluids sensitive to ambient atmosphere or prone to

drying when using this setting. The negative pressure purge is equal to the amount of vacuum provided to the vacuum connection at the rear panel.

Do not aspirate your dispensing fluid into the Pneumatics Controller.

Factory Support

For any questions regarding the CT-PT-21 Pneumatics Controller, or ink jet technology, contact

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